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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.		
10/007,795	11/09/2001	Douglas E. Weitzel	900122.427	1843		
21967	7590	03/25/2005	<table border="1"><tr><td>EXAMINER</td></tr><tr><td>SMITH, ZANDRA V</td></tr></table>		EXAMINER	SMITH, ZANDRA V
EXAMINER						
SMITH, ZANDRA V						
HUNTON & WILLIAMS LLP INTELLECTUAL PROPERTY DEPARTMENT 1900 K STREET, N.W. SUITE 1200 WASHINGTON, DC 20006-1109			ART UNIT	PAPER NUMBER		
2877						

DATE MAILED: 03/25/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/007,795	WEITZEL ET AL.	
	Examiner	Art Unit	
	Zandra V. Smith	2877	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1) Responsive to communication(s) filed on 09 November 2001.
 2a) This action is FINAL. 2b) This action is non-final.
 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4) Claim(s) 1-42 is/are pending in the application.
 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
 5) Claim(s) 23-29 is/are allowed.
 6) Claim(s) 1-5, 8, 15, 30-35 and 40 is/are rejected.
 7) Claim(s) 6, 7, 9-14, 17-22, 36-39, 41 and 42 is/are objected to.
 8) Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9) The specification is objected to by the Examiner.
 10) The drawing(s) filed on 09 November 2001 is/are: a) accepted or b) objected to by the Examiner.
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 a) All b) Some * c) None of:
 1. Certified copies of the priority documents have been received.
 2. Certified copies of the priority documents have been received in Application No. _____.
 3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) Notice of References Cited (PTO-892)
 2) Notice of Draftsperson's Patent Drawing Review (PTO-948)
 3) Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
 Paper No(s)/Mail Date 3/21/03, 7/23/02

4) Interview Summary (PTO-413)
 Paper No(s)/Mail Date. _____.
 5) Notice of Informal Patent Application (PTO-152)
 6) Other: _____

DETAILED ACTION

Information Disclosure Statement

The Information Disclosure Statements filed 21 March 2002 and 23 July 2002 have been entered and the references considered by the examiner.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 1-22 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Regarding claim 1, the phrase "sufficiently flexible," line 12 renders the claim indefinite because no measure is provided to ascertain the degree of flexibility of the optical fiber. Claims 2-22 are included for their dependence on claim 1.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-2 and 8 are rejected under 35 U.S.C. 102(b) as being anticipated by *Houston et al. (4,410,895)*.

As to **claim 1**, Houston discloses an ink jet sensor method and apparatus, comprising:

a dispenser (24) for dispensing fluid, the dispenser having a orifice (see fig. 1) wherein the fluid flows out of the orifice of the dispenser and moves away from the orifice of the dispenser in a vertical path (see fig. 1, col. 3, lines 62-68);

a light source (52) directing light toward the path of the fluid;

a receiver optical fiber (54a, 54b) having a first end and a second end, the first end of the receiver optical fiber being proximately positioned to maintain a relative distance from the path of the fluid, the first end of the receiver optical fiber receiving variations in light intensity as the dispensed fluid blocks a portion of the light, the second end of the receiver optical fiber connected to a light receiving device for monitoring the variations in light intensity, wherein a length of fiber between the first end and the second end of the optical fiber flexible and accommodates the movement of the dispenser (see fig. 2, col. 5, lines 18-40, and col. 2, lines 50-60).

As to **claim 2**, Houston discloses everything claimed, as applied above, in addition e light source is transmitted through a transmitter optical fiber (50), the transmitter optical fiber being proximately positioned to maintain a relative distance from the path of the fluid (col. 5, lines 25-40).

As to **claim 8**, Houston discloses everything claimed, as applied above, in addition the receiver is a light intensity transducer (col. 5, lines 25-40).

Claims 30 is rejected under 35 U.S.C. 102(b) as being anticipated by *Sachs et al.*

(5,807,437).

As to **claim 30**, Sachs discloses a three-dimensional printing system that includes measuring a characteristic of a discharged fluid by optical means; and adjusting an operating parameter of the three-dimensional printer in response to the measured characteristic of the discharged fluid (col. 8, lines 1-10).

Claims 31-32 and 40 are rejected under 35 U.S.C. 102(b) as being anticipated by *Anderson et al. (5,627,571)*.

As to **claims 31-32**, Anderson discloses a drop sensing and recovery system for an ink-jet printer that includes means for determining a delivery (10) of units of a fluid; means for recording information (col. 6, lines 35-40) about the delivery of units of the fluid; and

means for comparing the information about the delivery of units of fluid with information about command for delivery of units of fluid (col. 5, line 60-col. 6, line 10).

projecting a light beam across a fluid path;
dispensing fluid from a dispenser upon a command signal through the fluid path;
receiving variations in light intensity due to the dispensed fluid moving through the light beam; and

producing an analog signal from the received variations in light intensity (col. 5, line 60-col. 6, line 10).

As to **claim 40**, Anderson discloses everything claimed, as applied above, in addition the fluid is counted in real time (col. 4, lines 45-68).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 3-5 and 15-16 are rejected under 35 U.S.C. 103(a) as being unpatentable over *Houston et al. (4,410,895)*.

As to **claim 3**, Houston discloses everything claimed, as applied above, with the exception of an LED as the light source, however to do so would have been obvious to one having ordinary skill in the art at the time of invention since LED's are small, inexpensive and easily controllable.

As to **claims 4**, Houston discloses everything claimed, as applied above, with the exception of details of the fibers, however the provision of a coherent fiber bundle would have been obvious to one having ordinary skill in the art at the time of invention as a means to provide for flexibility and to make it possible to carry images to the detector.

As to **claims 5 and 16**, Houston discloses everything claimed, as applied above, in addition the light is continuous (col. 5, lines 25-35).

As to **claim 15**, Houston discloses everything claimed, as applied above, with the exception of details of the fibers, however the provision of a incoherent fiber bundle would have been obvious to one having ordinary skill in the art at the time of invention since incoherent bundles are flexible, easy to make and inexpensive.

Claims 33-35 are rejected under 35 U.S.C. 103(a) as being unpatentable over *Anderson et al.* (5,627,571).

As to **claim 33**, Anderson with the exception of details of the fibers, however the provision of a coherent fiber bundle would have been obvious to one having ordinary skill in the art at the time of invention as a means to provide for flexibility and to make it possible to carry images to the detector.

As to **claim 34**, Anderson discloses everything claimed, as applied above, in addition the information from the fiber is used to estimate flow rate (col. 3, lines 40-60).

As to **claim 35**, Anderson discloses everything claimed, as applied above, with the exception of details of the fibers, however the provision of a incoherent fiber bundle would have been obvious to one having ordinary skill in the art at the time of invention since incoherent bundles are flexible, easy to make and inexpensive.

Allowable Subject Matter

Claims 23-29 are allowable over the prior art of record

Claims 6-7, 9-14, 17-22, 36-39, and 41-42 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The following is a statement of reasons for the indication of allowable subject matter: the prior art of record, taken alone or in combination, fails to disclose or render obvious stroboscopic pattern (claim 6, 17), Fourier transform device (claims 9 and 41), a discretizer that indentifies parts of the time dependent electrical signal (claims 10 and 38), a camera (claim 19), more than

one light source in the print head (claim 22), moving the print head wherein the optical fiber is flexible and has two ends and one end is able to move with the print head during operation (claims 23-24), analyzing the time-dependent electrical signal in the form of a frequency spectrum having various harmonics (claim 25); calculating fluid dimensions (claim 36), displaying multiple images (claim 37), recording binary signals (39) or detection of split-streaming (claim 42), in combination with the rest of the limitations of the claims.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Murcia et al. (US 6,604,807 B1) discloses a method and apparatus for detecting anomalous nozzles in an ink-jet printer that includes measuring the ink droplets using a fiber optic sensor and correcting for any discrepancy.

discloses everything claimed, as applied above, with the exception of details of the fibers, however the provision of a incoherent fiber bundle would have been obvious to one having ordinary skill in the art at the time of invention since incoherent bundles are flexible, easy to make and inexpensive.

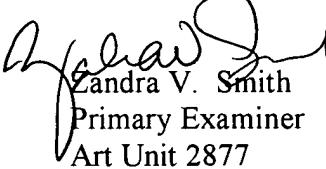
Fax/Telephone Information

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Zandra V. Smith whose telephone number is (571) 272-2429. The examiner can normally be reached on 8:00 a.m. - 4:30 p.m..

Art Unit: 2877

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Gregory J. Toatley Jr. can be reached on (571) 272-2800 ext. 77. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Sandra V. Smith
Primary Examiner
Art Unit 2877

March 19, 2005